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CS 4395.001

1/28/23

Overview of NLP

a. define NLP in your own words

NLP, Natural Language Processing, relates computers being able to process and understand both text and spoken words similar to the way humans can. This involves things like Siri being able to understand what you tell it to do, as well as email filtering, and there are more and more applications every day.

b. describe the relationship between AI and NLP

AI and NLP are heavily related. Both NLP and ML are subsets of AI. They are different branches of the big umbrella that is AI, so there are many similarities between the three of them but they are not the same thing.

c. write a sentence or two comparing and contrasting natural language understanding and natural language generation

Natural Language Understanding and Natural Language Generation are similar in that they are both branches of Natural Language Processing. The differences is exactly what the names suggest. NLU deals with computers being able to “read” and “understand”, and NLP deals with computers being able to “write” or “create”.

d. list some examples of modern NLP applications

Some modern examples include the use of chatbots, text to speech, email filters, data analysis, and smart assistants. These are all broad concepts that can be used to improve businesses or just the everyday life of the average person.

e. write 3 paragraphs describing each of the 3 main approaches to NLP, and list examples of each approach

Rules-based is the oldest and probably the simplest approach to NLP. Rules are established and used to reach a goal. For example, if you wanted to look for phone numbers, you could set a rule that a phone number has the format 000-000-0000, 10 digits and 2 dashes. Rules-based is great for simple things like this, but when variety is introduced, it doesn’t scale up well at all.

Statistical and Probabilistic approaches involves bringing math into play. By just counting words and calculating the likelihood that certain words or phrases will be used, the data collected can be useful for things like machine translation systems and predictive text. Numbers don’t lie. Examples:

Finally, Deep Learning has to do with neural networks, which are series of algorithms that work together to try and mimic the human brain, or come as close to doing that as possible. Deep Learning is difficult to achieve and is used on a small scale a lot of the time, and even NLP projects using DL will still often take techniques from the other two approaches, so it is still a work in progress.

f. write a paragraph describing your personal interest in NLP and whether/how you would like to learn more about NLP for personal projects and/or professional application

I am new to NLP and took this class to learn more about it. I am certainly interested in anything AI related, because that's where the world is (supposedly) heading. It's at least certainly where I WANT to be headed. Machines becoming sentient and taking over just seems so awesome.